

EXECUTIVE SUMMARY

Section 10 of Engrossed Substitute House Bill 2496 (Salmon Recovery Act of 1998), directs the Washington State Conservation Commission, in consultation with local government and treaty tribes to invite private, federal, state, tribal, and local government personnel with appropriate expertise to convene as a Technical Advisory Group (TAG). The purpose of the TAG is to identify limiting factors for salmonids. Limiting factors are defined as “conditions that limit the ability of habitat to fully sustain populations of salmon, including all species of the family Salmonidae.” It is important to note that the charge to the Conservation Commission in ESHB 2496 does not constitute a full limiting factors analysis. A full habitat limiting factors analysis would require extensive additional scientific studies for each of the subwatersheds in Water Resource Inventory Area (WRIA) 18. Analysis of hatchery, hydro, and harvest impacts would also be part of a comprehensive limiting factors analysis, but these elements will be considered in other forums.

WRIA 18 is located on the north Olympic Peninsula, with streams and rivers draining to the Strait of Juan de Fuca. WRIA 18 includes two large river systems (Dungeness and Elwha rivers); one medium sized river system (Morse Creek); and 14 smaller independent drainages to salt water (Bell, Gierin, Cassalery, Cooper, Meadowbrook, McDonald, Siebert, Bagley, Lees, Ennis, Peabody, Valley, Tumwater, and Dry creeks). Topography of the subwatersheds ranges from small lowland drainages with headwaters in the low foothills of the Olympic Mountains, to the larger drainages with headwaters in the high elevation peaks of the Olympic Mountains. Stream channels range from low gradient unconfined channels in the lower Dungeness valley to deep confined canyons on the Elwha River and other drainages. Measured precipitation ranges from 240 inches annually in the headwaters of the Elwha River, to only 15 inches in the lower Dungeness Valley, where rainfall is limited by the “rainshadow” effect of the Olympic Mountains.

This report addresses habitat conditions that support anadromous salmonids, based on the stock designations identified in the Salmon and Steelhead Stock Inventory (SASSI, Washington Department of Fish and Wildlife (WDFW) and Western Washington Treaty Indian Tribes (WWTIT) 1992). This report attempts to compile the best available information on the current distribution and condition of salmonid stocks, for use in determining potential benefits of salmonid habitat protection and restoration efforts. Table 1 provides a summary of identified salmon stocks, initial SASSI status, status update recommendations based on Technical Advisory Group (TAG) input, and ESA listing status (Char and Coastal Cutthroat distribution and status are not specifically included in this report, and will be incorporated in a future update). Distributions of individual salmon and steelhead species are shown on the maps in the separate Maps appendix (hard copy) or file (electronic version) included with this report.

Table 1: WRIA 18 Salmon and Steelhead Stock Designations and Associated Status

Stock	SASSI Status	Updated Status Recommendation	ESA Listing Status
Dungeness Spring/Summer Chinook	Critical	Critical	Threatened
Elwha/Morse Creek Summer/Fall Chinook	Healthy	Depressed/Critical	Threatened
Elwha Spring Chinook	Not Identified as Distinct Stock	Critical/Extinct	Threatened
Dungeness Summer Chum	Not Identified as Distinct Stock	Depressed/Critical	Threatened
Dungeness River/East Strait tribs Fall Chum	Unknown	Critical	Not Warranted
Elwha Fall Chum	Unknown	Critical	Not Warranted
Dungeness Coho	Depressed	Depressed	Candidate
Morse Creek Coho	Depressed	Depressed	Candidate
Dry Creek Coho	Not Identified as Distinct Stock	Unknown (very low numbers)	Candidate
Elwha Coho	Healthy	Healthy	Candidate
Upper Dungeness Pink	Depressed	Depressed	Not Warranted
Lower Dungeness Pink	Critical	Critical	Not Warranted
Morse Creek Pink	Not Identified as Distinct Stock	Depressed/Critical	Not Warranted
Elwha Pink	Critical	Critical	Not Warranted
Dungeness Summer Steelhead	Depressed	Critical	Not Warranted
Morse Creek Summer Steelhead	Not Identified as Distinct Stock	Unknown	Not Warranted
Elwha Summer Steelhead	Depressed	Critical	Not Warranted
Dungeness Winter Steelhead	Depressed	Critical	Not Warranted
Morse Creek/Independents Winter Steelhead	Depressed	Depressed	Not Warranted
Port Angeles Area Winter Steelhead	Not Identified as Distinct Stock	Unknown	Not Warranted
Elwha Winter Steelhead	Depressed	Depressed	Not Warranted

Data included in this report include formal habitat inventories or studies specifically directed at evaluating fish habitat, other watershed data not specifically associated with fish habitat evaluation, and personal experience and observations of the watershed experts involved in the TAG. These data provide an analysis of the salmonid habitat limiting factors in the Elwha-Dungeness watershed, also known as WRIA 18 (see location on Figure 1). Although many of the habitat data/observations in this report may not meet the highest scientific standard of peer reviewed literature, they should nevertheless be considered as valid, as they are based on the collective experience of the watershed experts that are actively working in these streams. Although there are a significant number of past studies and reports on these watersheds, a large number of salmonid habitat “data gaps” remain, which will require additional specific watershed research or evaluation. The available data indicate several common habitat themes across watersheds within WRIA 18, including:

- natural stream ecological processes have been significantly altered due to adjacent land management practices and direct actions within the stream corridor,

- substrate sediment transport processes have been altered to the extent that has resulted in stream morphology changes, either due to excess sediment contribution from land use practices in the watersheds, or preclusion of sediment transport due to dams
- fine sediment (<.85 mm) levels in the gravels of several streams are identified as likely being high enough to adversely affect spawning success and benthic invertebrate production,
- lack of adequate large woody debris in streams, particularly larger key pieces that are critical to developing pools, log jams, and other habitat diversity important to salmonids,
- lack of adequate pool frequency, or large deep pools that are important to rearing juvenile salmonids and adult salmonids on their upstream migration,
- loss of natural floodplain processes, due to confinement of channels by dikes, levees, bank armoring, and channelization, including the loss of functional off-channel habitat
- loss of riparian function due to removal/alteration of natural riparian vegetation, which affects water quality, lateral erosion, streambank stability, instream habitat conditions, etc.,
- the presence of a significant number of culverts/screens/dams/etc. that preclude unrestricted upstream or downstream access to juvenile and adult salmonids,
- significant increase in peak flow frequency and magnitude due to channelization, routing of stormwater through the irrigation delivery system, and increased stormwater runoff from lands that have been converted to non-forest status; many of the less developed streams are facing similar threats from further development and growth,
- alteration and reduction of the normal streamflow regime due to irrigation and other water withdrawals (the Dungeness River valley has the most intensively developed irrigation use of any river system in western Washington), and
- estuarine/marine function is significantly impacted by physical alteration of natural estuaries, by significant alteration of nearshore ecological function due to shoreline armoring, and by poor water quality in Port Angeles harbor.

There is stark contrast between watershed types and impacts across WRIA 18, mainly associated with topography and land use. Much of the Elwha River is located within the boundaries of the Olympic National Park (ONP), where habitat conditions are excellent. However, anadromous salmonids have been precluded from approximately 70 miles of mainstem habitat and all of the tributary habitat since the construction of Elwha Dam in 1910, and subsequent construction of Glines Canyon Dam upstream. The floodplain and channel downstream of the Elwha Dam has been altered by construction of dikes, water diversion pipelines, and development, although the impacts are less significant than in other watersheds in WRIA 18. The Elwha estuary and marine nearshore area has been significantly altered by the loss of sediment transport from the Elwha River and marine feeder bluffs, and by diking that has precluded flow through historic distributaries.

Most of the Dungeness River Watershed lies outside the ONP and salmonid habitat in the anadromous accessible zone has been heavily impacted by land use practices dating back to the mid-1800s. Dungeness River is the river system most affected by irrigation withdrawals in western Washington, and impacts to salmonids were identified in the early 1900s. Other major land use impacts to the Dungeness River and tributaries include logging impacts in headwater tributaries, agricultural and development impacts in the lower watershed, alteration of natural channel characteristics with heavy equipment, and floodplain constriction due to dikes, levies, and transportation corridors. Tributaries to the Dungeness River and independent drainages in the lower Dungeness valley are primarily low gradient streams flowing through agricultural areas and

the City of Sequim. The flows in these streams are influenced by increased groundwater flows from irrigation runoff, and will likely be adversely affected by water conservation actions in the Dungeness River. However, the benefits to fish resulting from water conservation efforts that restore instream flow in the Dungeness River are expected to greatly overshadow the habitat losses in the smaller streams. The tributaries and independent drainages are also heavily influenced by a history of channelization, riparian vegetation removal, and open access to livestock. The Dungeness estuary has been completely modified from historic condition by extensive diking and conversion of historic estuary to agriculture and development lots. The marine nearshore habitat in Dungeness Bay has been affected by the alteration of sediment transport from the Dungeness River, by shoreline armoring, and by loss of eelgrass habitat. Morse Creek, a smaller watershed between the Dungeness and Elwha rivers, was also a significant producer of anadromous salmonids, particularly in relation to its size. The channel has been altered by channelization, forest practices, and development. Floodplain function has been severely altered by floodplain constrictions resulting from diking, development encroachment, and transportation corridors. Historic estuary conditions, thought to be in large part responsible for Morse Creek's productivity, have been basically eliminated by development. The marine nearshore habitat at the mouth of Morse Creek has been altered by historic railroad construction and armoring within the intertidal area, which has eliminated the shallow nearshore habitat to the west of Morse Creek.

McDonald, Siebert, Bagley, and Lees creeks, located between the Dungeness River and Port Angeles, flow through incised ravines and drain directly to the Strait of Juan de Fuca. The lower portions of these streams are generally intact, but habitat in the upper portions are adversely affected by recent forest practices, agricultural practices, and rural development. Habitat in these streams would benefit from restoration actions. The streams in the Port Angeles urban area (Ennis, Peabody, Valley, Tumwater, and Dry creeks) have been highly modified to accommodate urban and commercial development in Port Angeles. Ennis Creek has restoration potential, particularly with the closure and removal of the old Rayonier mill. The other streams have a number of severe habitat problems that will require significant effort and cost to effectively address. The marine shoreline is armored from the mouth of Morse Creek, west through Port Angeles to the end of Ediz Hook. This armoring effectively eliminates most, if not all, natural nearshore habitat function.

The streams in WRIA 18 have been ranked on the basis of salmonid productivity potential resulting from habitat restoration:

- Highest – Dungeness River (including tributaries), Elwha River, Morse Creek,
- Moderate – Ennis, Siebert, Gierin, and Meadowbrook, Bell, Cassalery, and McDonald creeks
- Lower –Cooper, Bagley, Lees, Valley, and Tumwater creeks
- Little potential – Peabody Creek, Dry, and White (tributary to Ennis) creeks

However, this ranking should not preclude projects in lower priority streams that will effectively address identified habitat limiting factors, particularly where willing landowners and partnerships can increase the effectiveness/efficiency of the restoration project. Habitat conditions also vary between different reaches of a stream; restoration proposals should consider the potential benefits of the proposal in relation to habitat conditions likely to be encountered by salmonids elsewhere in the stream. This ranking represents a snapshot in time; ranking and benefits may change as a result of habitat restoration successes.

In addition, restoration of the marine nearshore should be considered a high priority, based on benefits to all salmonid stocks including stocks originating outside WRIA 18.

Protection/restoration of salmonid resources can not be accomplished by watershed restoration projects alone. It is unlikely that we will be able to resolve the salmon predicament using the same land management approaches that got us into it. We will need to look at the watershed with a clear new vision. Salmonid recovery will require a combination of efforts, including:

- revision, implementation, and enforcement of land use ordinances that provide protection for natural ecological processes in the marine, instream, and riparian corridors, including measures to maintain impervious surfaces to levels, and in a manner, that will maintain natural hydrology,
- protection of marine, instream, and riparian habitat that is currently functioning, particularly key habitat areas, and
- restoration of natural marine, instream, and riparian ecological processes where they have been impaired.

This report provides information that can and should be used in the development of salmonid habitat protection and restoration strategies. It should be considered a living document, with additional habitat assessment data and habitat restoration successes incorporated as information becomes available.